

## WHAT IS CLAIMED IS:

1. A hybrid navigation system comprising:
  - a GPS signal processor for receiving GSP signals from satellites
  - 5 to determine positions of the mobile terminal;
  - a TDOA signal processor for receiving localization signals from stations of the mobile communication system to determine positions of the mobile terminal; and
  - a neural network for learning and predicting the positions of the
  - 10 mobile terminal based on signals received from the GPS signal processor and the TDOA signal processor.
2. The hybrid navigation system of claim 1, wherein the GPS processor is used to determine position of the mobile terminal when four
- 15 or more GPS satellites are in view.
3. The hybrid navigation system of claim 1, wherein the neural network corrects weights to learn position information, receiving position values determined with the GPS signal processor, position
- 20 values determined with the TDOA signal processor and clock bias of a GPS receiver, and the position values determined with the GPS signal processor as a target value.

4. The hybrid navigation system of claim 3, wherein the neural network back propagates position values inputted by the GPS signal processor.

5 5. The hybrid navigation system of claim 3, wherein the neural network learns the position values inputted by the GPS signal processor in real time.

6. The hybrid navigation system of claim 3, wherein the  
10 target value of the neural network is a position value estimated with a Kalman filter of the GPS signal processor.

7. The hybrid navigation system of claim 1, wherein the TDOA signal processor predicts positions of the mobile terminal in case  
15 that the number of visible satellites is less than four.

8. The hybrid navigation system of claim 1, wherein the neural network receives the position values determined with the TDOA signal processor to predict positions of the mobile terminal by the  
20 learning process.

9. A method of determining positions of a mobile terminal, comprising:

receiving position values determined with the GPS and the TDOA system;

learning the determined position information by a neural network in case that the number of the GPS signal is four or more;

5       estimating a present position of the mobile terminal with the GPS; and

estimating positions of the mobile terminal with the TDOA system including the learned neural network in case that the number of the received GPS signals is less than four and the total number of the  
10       received GPS and TDOA signals is three or more; and

initializing the GPS and the TDOA system in case that the total number of the received GPS and TDOA signals is less than three.

10.       The method of claim 9, wherein the case that the number  
15       of the TDOA signals is three or more takes priority in the step of estimating the position of the mobile terminal with the TDOA system.

11.       The method of claim 9, wherein the neural network learns  
by back-propagation.

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12.       The method of claim 9, wherein the position with the GPS becomes the target value during the learning of the neural network.